

Semiconductor thermogenerator 4.1.07-00



What you can learn about ...

- Seebeck effect (thermoelectric effect)
- Thermoelectric e.m.f.
- Efficiency
- Peltier coefficient
- Thomson coefficient
- Seebeck coefficient
- Direct energy conversion
- Thomson equations

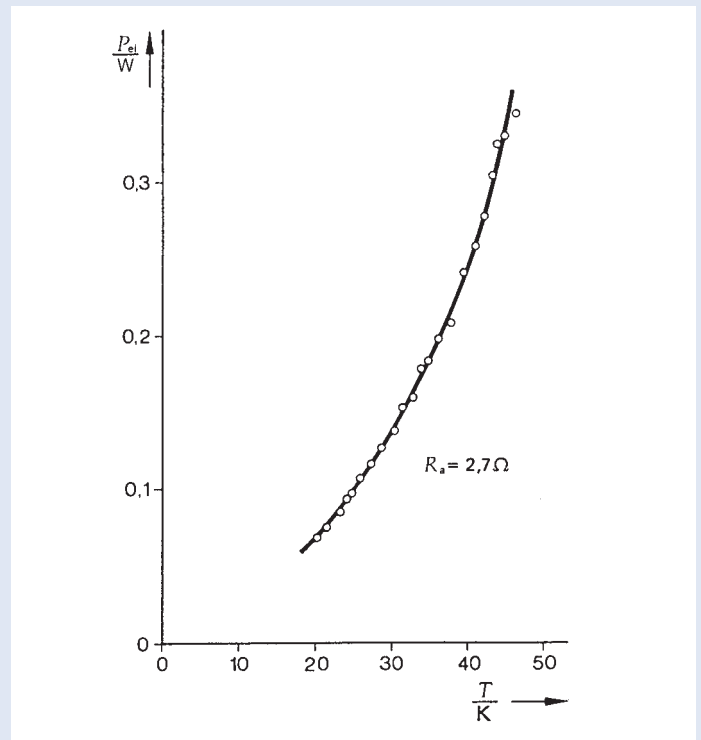
Principle:

In a semi-conductor thermogenerator, the no-load voltage and the short-circuit current are measured as a function of the temperature difference. The internal resistance, the Seebeck coefficient and the efficiency are determined.

What you need:

Thermogenerator	04366.00	1
Flow-through heat exchanger	04366.01	2
Heat conductive paste, 50 g	03747.00	1
Connection box	06030.23	1
Rheostats, 33 Ω, 3.1 A	06112.02	1
Voltmeter 0.3...300 V-, 10...300 V~	07035.00	1
Ammeter 1/5 A DC	07038.00	1
Stopwatch, digital, 1/100 s	03071.01	1
Immersion thermostat TC10	08492.93	1
Accessory set for TC10	08492.01	1
Bath for thermostat, Makrolon	08487.02	1
Laboratory thermometers, -10...+100°C	38056.00	1
Precision mercury thermometers, -10...+ 50°C	38033.00	1
Resistor 2 Ω 2%, 2W, G1	06055.20	1
Rubber tubing, $d_1 = 6$ mm, $l = 1$ m	39282.00	4
Connecting cable, 4 mm plug, 32 A, red, $l = 50$ cm	07361.01	3
Connecting cable, 4 mm plug, 32 A, blue, $l = 50$ cm	07361.04	2

Complete Equipment Set, Manual on CD-ROM included
Semiconductor thermogenerator P2410700



Electrical power generated as a function of the temperature difference.

Tasks:

1. To measure no-load voltage U_0 and short-circuit current I_s at different temperature differences and to determine the Seebeck coefficient.
2. To measure current and voltage at a constant temperature difference but with different load resistors, and to determine the internal resistance R_i from the measured values.
3. To determine the efficiency of energy conversion, from the quantity of heat consumed and the electrical energy produced per unit time.